NEW SPECIES AND COMBINATIONS IN AGERATINA (ASTERACEAE-EUPATORIEAE) FROM MEXICO

B. L. Turner

Dept. of Botany, University of Texas, Austin, TX 78713

ABSTRACT

Ten new species of Ageratina are described (A. barriei, A. beamanii, A. gentryana, A. hernandezii, A. neohintoniorum, A. potosina, A. queretaroana, A. sandersii, A. sousae and A. warnockii) and five new combinations are proposed, all transfers from Eupatorium.

Preparation of a treatment of the Asteraceae for Mexico (Turner and Nesom, in prep.) necessitates description of the following species and proposed name changes in Ageratina.

AGERATINA BARRIEI B. Turner, sp. nov., Fig. 1.

A. anchistae affinis sed foliis amplioribus petiolis longioribus et capitulis amplioribus paucioribus corollis longioribus.

Perennial herbs to 1 m high. Stems terete, ca 0.4 mm diameter at mid-stem, arising from a coarse fibrous root-system, pubescent with crinkly, multiseptate hairs. Leaves opposite, remote, 8-16 cm long, 3-8 cm wide, the stem leafy throughout (ca 12 pairs); petioles 3-8 cm long, blades neatly cordate, 3(7)-nervate from the base, sparsely pubescent above and beneath with crinkly multiseptate hairs, the margins crenulate. Heads campanulate, 6-7 mm high, ca 30 in terminal, open, corymbose panicles, the ultimate peduncles glabrous, mostly 1-2 cm long. Involucres 5-6 mm high, 2-seriate; bracts subequal, glabrous, ca 1.6 mm wide, the apices mostly obtuse or rounded. Florets numerous (50+); corollas 3-4 mm long, the tube ca as long as the narrow tubular limb, the lobes pubescent. Achenes fusiform, ca 2 mm long, moderately hispid; pappus of ca 30 white, barbellate, bristles 4 mm long.

TYPE: MEXICO. JALISCO: Mcpio. Casimiro Castillo, Puerto los Mazos, 15 km S of Autlan de Navarro on the road to Barro de Navidad (19° 40'N x 104° 25'W), oak forests, open hillsides in volcanic soils; 18 Nov 1984, F. D. Barrie, D. A. Gage & A. Solis 1146 (holotype TEX).

The species is clearly related to the Eupatorium [Ageratina] bellidifolium complex, as defined by Grashoff

and Beaman (1969) and would key to E. achisteum in their treatment. In McVaugh's (1984) Flora Novo-galiciana, Ageratina barriei will key to Eupatorium muelleri but it is clearly much closer in all details to E. achisteum, which is known only from Guatemala, Honduras, and adjacent Nicaragua. The present species differs in its much larger leaves and fewer, larger, heads on longer ultimate peduncles.

It is a pleasure to name this taxon for its only known collector, Fred Barrie, doctoral student at the University of Texas, Austin, and avid worker on the family Valerianaceae.

AGERATINA BEAMANII B. Turner, sp. nov.

A. lemmonii (B. L. Rob.) King & H. Rob. simile sed capitulescentia ampliore laxiore ramis flexilibus et phyllariis brevioribus apice minus acuminato differt.

Erect perennial herbs 50-60 cm high. Stems simple, terete, puberulent at first, but soon glabrate, reddish above. Leaves opposite, sessile or nearly so, 3-5 cm long, 1.5-2.0 cm wide; blades ovate, 3(5)-nervate from the base, glabrous or nearly so, the margins serrulate. Heads white, in 15-numerous, very open, corymbose panicles, the ultimate peduncles minutely puberulent, mostly 10-25 mm long. Involucre 4-5 mm high, 2-seriate, eximbricate, glabrous except for the fringed margins. Receptacle plane, glabrous. Disk florets 40-60; corollas ca 3 mm long, the limb ca 1.5 mm long, abruptly campanulate, the lobes pubescent. Achenes ca 2 mm long, hispidulous, the pappus 1-seriate, of ca 25 deciduous white bristles ca 3 mm long.

TYPE: MEXICO. JALISCO: Open oak-pine woods in the mountains ca 32 road mi W of Ayutla, and ca 70 mi NW of Autlan, ca 6300 ft, 4 Nov 1962, A. Cronquist 9805 (holotype TEX; isotypes MEXU, NY).

Additional specimens examined: MEXICO. DURANGO: Mcpio. de Mezquital, 3 km S of Sta. Ma. de Ocotan, 17 Oct 1984, Gonzalez & Acevedo 1571 (TEX). NAYARIT: Mcpio. de El Nayar, rocky ridge along the Arroyo Santa Rosa, W of Santa Teresa, ca 100 airline km NNE of Tepec, 2095 m, 21-24 Oct 1979, Breedlove 44463 (TEX).

Type material was distributed as Eupatorium lemmonii B. L. Rob. and was so cited in McVaugh's (1984) treatment of Eupatorium for Flora Novo-galiciana. Ageratina beamanii is readily distinguished from that taxon by its much more expanded, broadly paniculate, capitulescence

with more flexuous branches, smaller involucral bracts (4-5 mm high vs 6-7 mm) with more attenuate apices. It belongs to the subgenus Ageratina and relates to the Eupatorium bellidifolium Benth. complex, as treated by Grashoff and Beaman (1969), and will key with difficulty to E. choricephalum in their treatment. The latter, however, has markedly petiolate, usually cordate, blades, otherwise they are quite similar.

It is a pleasure to name this species for my friend and colleague, Dr. John Beaman, of Michigan State University, whose work with the late J. Grashoff has helped clarify relationships among the A. bellidifolia complex.

AGERATINA GENTRYANA B. TURNER, sp. nov.

A. viscosissima (Rolfe) K. & R. simile sed capitulis parvioribus, corollis parvioribus tubo limbo longioribus, acheniis parvioribus setis pappi 10 differt.

Annual herbs to 1 mm high. Stems terete, erect, densely pubescent with glandular-trichomes interspersed with longer, crinkled-crisped, non-glandular trichomes. Leaves opposite (rarely alternate above), broadly ovate to subcordate, those at mid-stem 10-20 cm long, 4-8 cm wide; petioles 4-9 cm long, pubescent like the stems; blades thin, pubescent on both surfaces, (3)5-nervate from at or near the base, the margins crenulate. Heads white, numerous in terminal expanded, corymbose panicles, the ultimate peduncles slender, 3-10 mm long, glandular pubescent. Involucres 3-4(5) mm long, 2-seriate, eximbricate; bracts 24-28 sparsely pubescent. Florets 50-60; corollas goblet-shaped, ca 3 mm long, the tube 1.5-2.0 mm long, the limb 1.0-1.5 mm long; lobes moderately pubescent. Achenes black, ca 1 mm long, short-clavate, the faces minutely papillose-hispid; pappus of ca 10, very fragile, deciduous, barbellate bristles ca 3 mm long.

TYPE: MEXICO. SINALOA: along hwy 40 between La Guayanera and El Cantil, ca 21 mi NE of Concordia and 34 mi NE of Villa Union (ca 105°50'W x 23°24'N). Rocky, oak-covered slopes cut by small canyons with tropical broad-leaved forest of Croton draco, Ipomoea arborea, etc. "Fairly common 2 ft. annual." 2800 ft, 28 Mar 1984, A. C. Sanders et al. 4972 (holotype TEX; isotype UCR).

Additional specimens examined: MEXICO. SINALOA: Sierra Monterey, Quebrado de Platano, "moist shady canyon bottom under Alisos and walnuts", 13 Mar 1940, H. S.

Gentry 5910 (GH); Sierra Surotato, Canyon de Tarahumare, 3000-4000 ft, 17-24 Mar 1945, Gentry 7169 (ARIZ, GH).

The species is superficially similar to A. viscosissima (Rolfe) King & H. Rob. of southern Baja California but contrasts with that species as follows:

viscosissima	gentryana
Perennial	Annual
Involucre 5-6 mm high	Involcre 3-4(5) mm high
Achenes ca 2 mm long	Achenes ca 1 mm long
Corolla narrowly funnelform	Corolla goblet-shaped
tube 1.0-1.5 mm long	tube 1.5-2.0 mm long
limb 2.5-3.5 mm long	limb 1.0-1.5 mm long

The very small, minutely hispidulous, achenes are particularly diagnostic, as are the small corollas with tube longer than the throat, the lobes being moderately pubescent.

While compared with A. viscosissima, the present species perhaps stands somewhere between that taxon and A. parayana (see discussion under the latter), differing from both in its presumably annual habit and small heads. Achenal characters would relate it to A. viscosissima (possessing very similar pappus bristles) while floral features relate it to A. parayana (globet-shaped corollas).

AGERATINA HERNANDEZII B. TURNER, sp. nov.

A. calaminthifolia H. B. K. simile sed foliis amplioribus petiolis longioribus et receptaculis glabris differt.

Shrublet up to 1 mm high. Stems terete, densely short puberulent. Leaves opposite, 7.0-8.5 cm long, 4-5 cm wide; petioles 1.5-2.5 cm long; blades elliptic-ovate, (3)5-nervate from, or near, the base, densely glandular-punctate on both surfaces, glabrous, or nearly so, the margins crenulate. Heads white, numerous in both terminal and axillary, subfasciculate, corymbs, the ultimate peduncles puberulent, 3-10 mm long. Involucres turbinate, biseriate, eximbricate, ca 5 mm high, the bracts 8-10, linear-lanceolate, puberulent. Receptacle plane, glabrous. Florets 10-15 per head; corallas ca 3.5 mm long, glabrous, the tube ca 1.5 mm long, the limb narrowly funnelform. Achenes ca 2.5 mm long, hispid along the angles; pappus 1-serate, of 40-50 white or pinkish, rather persistent, bristles, 3-4 mm long.

TYPE: MEXICO. TAMAULIPAS: Cerro El Diente, Sierra de San Carlos, 17 km al SW de San Carlos (98° 06'W x 23° 16'N), ca 1080m, 28 Nov 1984, Luis Hernandez 1321 (holotype TEX; isotype UAT).

This species was apparently first collected by H. H. Bartlett (10485 MICH, vicinity of San Jose, Sierra de San Carlos; photograph US) in 1930 and was distributed as Eupatorium hebes B. L. Rob. var. rasum B. L. Rob. More recently King and H. Robinson annotated the specimen as Ageratina hebes (B. L. Rob.) King & H. Rob. The latter, in my opinion, is synonymous with the widespread, variable, A. tomentella (Schrad.) King & H. Rob., which is confined to Southern Mexico and adjacent Guatemala. The present taxon is readily distinguished from the latter by its glabrous leaves and nonvenulose glandular punctations and probably stands closest to A. calaminthifolia (H.B.K.) King and H. Rob., a species of northern Mexico which can be distinguished from A. hernandezii by its smaller leaves and pubescent receptacles.

The present species is named for Mr. Luis Hernandez, prolific collector of the Tamaulipan region working out of the University of Tamaulipas (UAT-CONCACYT), Ciudad Victoria.

AGERATINA NEOHINTONIORUM B. Turner, sp. nov. Fig. 2

A. salicifoliae affinis sed foliis tenuioribus petiolo abrupte rotundatis, trichomatibus caulium glandiferis, et capitulis paucioribus differt.

Erect herb to 50 cm high. Stems slender, reddish, sparsely branched, glandular-pubescent to glabrate. Leaves opposite throughout, the nodes remote; petioles 0.5-1.0 mm long, or seemingly absent; blades lanceolate to lance-elliptic, 3-4 cm long, 1.0-1.5 cm wide, 3-nervate from near the base, the margins remotely denticulate. Heads campanulate, borne 5-10 in terminal or axillary corymbs, the ultimate peduncles 2-4 cm long, pubescent with glandular trichomes. Involucres 6 mm high, 2-seriate, eximbricate; bracts elliptic-lanceolate, 2(3)-nervate, ca 2 mm wide, the outer series glandular pubescent. Receptacle plane, ca 3 mm across. Florets ca 50 per head; corollas white, ca 5 mm long, the tube ca 2 mm long, the throat abruptly flaring, the lobes pubescent. Achenes spindle-shaped, ca 2 mm long, hispidulous; pappus of ca 30 white, deciduous, bristles, 4-5 mm long.

TYPE: MEXICO. MEXICO STATE: Mcpio. Temascaltepec,

"Cumbre-Cimientos" pine forest, 26 Jan 1936, G. B. Hinton et al. 8848 (holotype LL; isotypes MICH, UC).

The species belongs to the subgenus Ageratina and combines involucral and floral features of the A. bellidifolia complex with vegetative features much like A. salicifolia King & H. Rob. It can be distinguished from the latter by its thinner, more broadly-based, leaves, fewer-headed capitulescence which is pubescent with stout glandular-trichomes.

In providing the specific name I hope to make amends for my superfluous A. hintoniorum B. Turner which is synonymous with A. vernicosa Brandegee (cf. Turner, 1987).

AGERATINA OREITHALES (Greenm.) B. Turner, comb. nov. Based upon Eupatorium oreithales Greenm., Proc. Amer. Acad. Arts 32:308. 1897.

This taxon is closely related to A. prunellifolia (H.B.K.) King and H. Rob., but in my opinion distinct. It differs from the latter in several characters, including leaf shape and eglandular peduncles. Both taxa are maintained by Espinosa (1985) for the Flora Fanerogamica del Valle de Mexico and Williams (1976) maintains A. oreithales (as Eupatorium nubivagum L. Wms.) in the Flora of Guatemala. I accept A. oreithales to be a wide-ranging taxon occurring primarily along the Sierra Madre Oriental from Southern Nuevo Leon to Guatemala, with extensions along the trans-volcanic belts to the Pacific ranges in Michoacan and Guererro. I have observed the two taxa occurring together, and at one site (slopes of Cofre de Perote, 3200 m, in Veracruz; Guererro TEX) a putative hybrid was collected which had a chromosome count of n=51 univalents. The A. oreithales-A. prunellifolia complex is clearly in need of detailed field and experimental study but present evidence suggests the presence of two taxa.

AGERATINA PARAYANA (Espinosa) B. Turner, comb. nov.

Based upon Eupatorium parayana Espinosa, Phytologia 56:331.1984.

Perennial herbs to 2.5 m high, superficially resembling E. viscosissima of Baja California but readily distinguished by its narrower heads with fewer florets, corollas with longer tubes and abruptly-flaring throats, pappus bristles 20-40 (as opposed to ca 10), glandular-pubescent leaves, etc.

Espinosa compared A. parayana with type material of A. viscosissima (through the aid of Annetta Carter) and noted the several differences that distinguish between them. However, description of the lobes as glabrous are ill-founded since my examination of type material and yet other material of A. viscosissima from Baja California show the lobes to be pubescent, albeit on the sparse side. Thus the latter clearly belongs to the subgenus Ageratina as it possesses most of the characters of that taxon, including pubescent lobes.

McVaugh (1984) applied the name A. viscosissima to material from the Mexican mainland (Sin, Mich and Gro), noting, however, many of the distinctions between these and material from Baja California. As I interpret the group, his Sinaloan plants probably belong to what I call here A. gentryana; the material from Michoacan and Guerrero probably belong to what I would call A. parayana. Espinosa, presumably, would largely restrict his A. parayana to the state of Mexico, but I would extend his concept to cover most of the broad-leaved, densely glandular, populations of Ageratina along the Pacific slopes south of Jalisco, including individuals with distinctly heart-shaped leaves. So defined, A. parayana is a variable species with perhaps infraspecific categories, but these await the study of more experienced field workers.

AGERATINA POTOSINA B. Turner, sp. nov.

A. oriethales (Greenm.) B. Turner sed caulibus suffruticosis ubique foliosis nodulis numerosioribus et capitulis amplioribus differt.

Suffruticose perennial herbs or shrublets 20-60 cm high. Stems puberulent to hirsutulous, about equally leafy throughout from 10-40 nodes. Leaves opposite, 3-8 cm long, 1-4 cm wide, strongly petiolate on the lower stems (mostly 1-3 cm long) but becoming sessile on upper stems; blades ovate (3)5-nervate from the base, sparsely puberulous along the veins or glabrate, the margins dentate to serratulate-crenulate. Heads campanulate, white, 3-10 in terminal subfasciculate cymes, the ultimate peduncles hirsutulous (rarely with a few glandular trichomes), 0.5-2.0 cm long. Involucre biseriate, eximbricate, mostly 7-9 mm long; bracts linear lanceolate, 1.5-2.5 mm wide, hirsutulous, the apices acute. Receptacle plane, glabrous. Florets 40-60; corollas ca 5 mm long, the tube ca 2 mm long, the lobes quite pubescent. Achenes ca 3 mm long, hispidulous; pappus of 30-50 readilly deciduous bristles 3.5-4.5 mm long.

TYPE: MEXICO. NUEVO LEON: Mcpio. Galeana, microwave station on Cerro Potosi, 2 Aug 1975, S. Lewis 144 (holotype TEX; isotype MEXU).

REPRESENTATIVE ADDITIONAL SPECIMENS EXAMINED (from among 14 or more collections): MEXICO. COAHUILA: Mcpio. Arteaga, Sierra del Coahuilon, 2950 m, 25 Aug 1985, Hinton et al. 18910 (TEX); Sierra La Viga, north side, 2700-3000 m, 24 Oct 1984, McDonald & Gomez 1183 (TEX); Sierra La Marta, 24 Oct 1981, Poole et al. 2462 (TEX). NUEVO LEON: Cerro Potosi:, pine forests above Las Canoas, 21 Jul 1935, Mueller 2278 (GH); Cerro Potosi, 2 mi down road from summit, 23 Aug 1984, Lavin 4797 (TEX); Cerro Potosi, 3500-3700 m, 26 Jul 1985, McDonald 1810 (TEX); Cerro Potosi, ca 3600 m, 26 Oct 1984, McDonald & Gomez 1266 (TEX); E slope Cerro Potosi, 20 Oct 1979, M. Warnock 2022 (TEX).

This taxon is apparently common in the subalpine habitats near the top of Cerro Potosi and in similar habitats on Sierras Coahuilon, La Marta and La Viga to the north in the nearby state of Coahuila. For a number of years I called the plants concerned, A. oreithales (Greenm), B. Turner, a predominantly herbaceous species with relatively few stem leaves largely distributed from southern Nuevo Leon (Sierra Peña Nevada) to Guatemala, in similar habitats. Both the latter and A. potosina are closely related to A. prunellifolia (H.B.K.) King & H. Rob. which has longer, glandular-pubescent, peduncles and smaller heads. The complex centering about this latter taxon is in much need of field work and experimental study.

AGERATINA QUERETAROANA B. Turner, sp. nov.

A. triniona (McVaugh) King & H. Rob. simile sed capitulescentia dense glandifera trichomatibus brevibus et phyllariis auguste acutis eximbricatis glandulipubescentibus differt.

Perennial herb or shrublet to 1.5 m high. Stems tan or purplish, densely pubescent with short, glandular, trichomes. Leaves opposite, 8-10 cm long, 5-7 cm wide; petioles 2-4 cm long, densely hirsutulous; blades cordate 3(5)-nerved from the base, glandular-punctate and covered with a dense velvety puberulence, less so with age, the margins evenly crenulo-dentate. Heads white, numerous in terminal corymbose-panicles the ultimate peduncles glandular-pubescent, 4-12 mm long. Involcres 2-seriate, eximbricate, 5-7 mm long; bracts greenish to purple, linear-lanceolate, ca 0.8 mm wide, narrowly acute,

glandular-pubescent. Receptacle glabrous. Florets 16-22; corollas 6-7 mm long, glabrous, the tube ca 2 mm long, gradually tapering into the narrowly funnelform throat. Achenes ca 3 mm long, hispidulous; pappus 1-seriate, of ca 25, white or reddish, bristles 4-5 mm long.

TYPE: MEXICO. QUERETARO: 1.5 mi W of Pinal de Amoles, pine forest at ca 7300 ft., north slopes, 11 Nov 1976, B. L. Turner 76-18 (LL, MEXU).

Additional collection examined: MEXICO. HIDALGO: ca 15 mi NE Villa Carranza, Barranca de Marmoles, pine forest, 2300 m, 12 Oct 1981, M. J. Warnock 2464 (TEX).

Ageratina queretaroana belongs to the subgenus Neogreenella and is closely related to the more western A. triniona from which it can be readily distinguished by its glandular-pubescent capitulescence, strictly eximbricate, glandular-pubescent, narrowly acute, involucral bracts and longer corollas.

AGERATINA RAMIREZIORUM (Espinosa) B. Turner, comb. nov.

Based upon Eupatorium ramireziorum Espinosa, Phytologia 56:335.1984.

This taxon is closely related to A. photina (B.L. Rob) King & H. Rob. but their leaves appear quite distinct, the latter having more lanceolate blades which are 3-nerved from the base.

AGERATINA ROBINSONIANA (Greene) B. Turner, comb. nov.

Based upon Eupatorium robinsonianum Greene, Erythea 1:150.1893.

Robinson (1926) treated this taxon as a variety of Eupatorium espinosarum A. Gray. McVaugh (1984) followed this treatment with some reservation, noting that its foliage is "scarcely if at all gummy", etc. Paradoxically, he also recognized E. subintegrum (Greene) B. L. Rob, which I would include under the fabric of E. espinosarum. At least E. robinsonianum is more distant from E. espinosarum than is E. subintegrum, the latter intergrading with the former over a broad region of northcentral Mexico. Thus, in our forthcoming treatment of Mexican Asteraceae (Turner & Nesom, in prep.) we will recognize both Ageratina robinsoniana and A. espinosarum, the latter with but two varieties: var espinosarum (=E. espinosarum var. ambiguum A. Gray) and var. subintegrifolia (B.L. Rob.) B. Turner, comb. nov., Based

upon Eupatorium espinosarum var. subintegrifolium B. L. Rob., Proc. Amer. Acad. Arts 26:165.1891.

AGERATINA SANDERSII B. Turner, sp. nov. Fig. 3.

A. neohintoniorum B. Turner simile sed foliis glabris amplioribus et capitulis parv. oribus numerosioribus acheniis glabris differt.

Erect perennial glabrous herbs to 80 cm high. Stems terete, glabrous. Leaves opposite throughout, 6-12 cm long, 1-3 cm wide; petioles 1-4 mm long, narrowly winged; blades lanceolate-elliptic, 3-nervate from the base, glabrous, finely reticulate, the margins remotely serrulate. Heads 15-30 in congested, terminal or axillary, corymbs, the ultimate peduncles glabrous, 3-5 mm long. Involucre ca 3 mm high, biseriate, eximbricate; bracts 2-nervate, ciliate, acute. Florets 20-30 per head; corollas white, ca 2.5 mm long, the tube ca 1.5 mm long, the throat ca 1 mm long, abruptly funnelform, the lobes pubescent. Achenes spindle-shaped, ca 1 mm long, glabrous; pappus of 10-15, readily deciduous, barbellate bristles ca 2 mm long.

TYPE: MEXICO. SONORA: 18.3 mi E of Rio Yaqui bridge near Tonichi, on the road to Carrizal and Santa Rosa (ca 109° 21'W x 18°30'N), ca 3200 ft, 27 Mar 1983, A.C. Sanders 3711 (holotype TEX; isotypes ARIZ, UC, UCR).

According to label data, the species is uncommon, "growing along a small stream" in a tropical deciduous forest with "Acacia cymbispina, Ceiba acuminata, Lysiloma watsoni, Quercus tuberculata . . .", etc.

Ageratina sandersii belongs to the subgenus Ageratina, possessing the heads and floral features of A. malacolepis (B. L. Rob.) King & H. Rob., but the foliage is suprisingly similar to A. neohintoniorum (described above), but the leaves are larger and it is essentially glabrous throughout.

It is a pleasure to name the species for its only known collector, Dr. A. C. Sanders, Curator, University of California at Riverside.

AGERATINA SOUSAE B. Turner, sp. nov.

A. bellidifolia (H.B.K.) King & H. Rob. simile sed caulibus ubique foliiferis, laminis foliorum pro parte maxima deltoideis vel flabellatis glabris et capitulis paucioribus in pedunculis brevioribus differt.

Erect perennial herb 50-60 cm high. Stems leafy throughout, slender, striate, glandular-pubescent (with age glabrate) arising from a small, fibrous-rooted, woody crown. Leaves 4-6 cm long, 2.0-3.5 cm wide; petioles 6-20 mm long; blades deltoid, flabellate or broadly ovate, glabrous, except beneath along the major veins, 3(5)-nervate from the base, the margins crenulo-dentate. Heads white, numerous in open corymbose panicles, the ultimate peduncles glandular-pubescent, 5-15 mm long. Involucres 5-7 mm long, 2-seriate, eximbricate; bracts 2-3 nervate, glandular-pubescent. Receptacle plane, glabrous. Disk florets 40-60; corollas ca 5 mm long, the tube ca 3 mm long, the lobes pubescent. Achenes ca 2.5 mm long, densely hispid along the angles; pappus 1-seriate of 20-25 white deciduous bristles.
TYPE: MEXICO. OAXACA: 27 mi NE Tlaxiaco, ca 6700 ft, "Brushy places in thin soil on sloping limestone rocks in pine-juniper country at the north base of the Sierra Madre del Sur.", 27 Oct 1965, A. Cronquist & M. Sousa 10421 (holotype TEX; isotypes MEXU, NY, etc.)

Additional specimens examined: MEXICO. OAXACA: along highway 175, ca 2 mi S of Loma Grande, ca 8000 ft, 28 Dec 1969, Clarke et al. 12940 4-6a (TEX, UC); 32 mi NW of Oaxaca, 7200 ft, 27 Oct 1965, Cronquist & Sousa 10424 (TEX).

The Cronquist collections were distributed as Eupatorium [Ageratina] prunellifolium H.B.K., vel. aff., but they clearly belong to the Ageratina bellidifolia complex as treated by Grashoff and Beaman (1969). Because of its glandular-pubescence, A. sousae will key to A. bellidifolia in their treatment, a very different taxon with predominantly basal, mostly elliptical, leaves and fewer heads on much longer ultimate peduncles.

It is a pleasure to name the species for Mario Sousa, outstanding legume systematist working out of MEXU.

AGERATINA TRIANGULATA (Alam. ex DC). B. Turner, comb. nov.

Based upon Eupatorium triangulatum Alam. ex DC., Prod. 5:172. 1836.

A. triangulata is closely related to, but clearly different from, A. rubricaulis (HBK.) King & H. Rob. The microfiche photograph (G-DC!) captures many of its distinctive vegetative features. It is readily distinguished from A. rubricaulis, the latter differing in having short internodes, short petioles, leaves

gradually reduced upwards, more ovate-deltoid, coarsely dentate, blades, etc, not to mention features of the capitulum.

Indeed, McVaugh (1984), having examined the type personally, correctly notes that "the type of Eupatorium triangulatum is a specimen with small corollas (4 mm long), short pappus (2-4 mm long), and only ca 12 flowers in a head (not 20-25 as usually found in this species [E. rubricaule])". Nevertheless, he placed this in synonymy under E. rubricaule HBK.

In addition to the microfiche type, I have examined the following collections, all of which share the combination of features which mark A. triangulata. MEXICO STATE: Temascaltepec, Sierritz, 3 Dec 1935, Hinton 8772 (GH,UC). GUERRERO: Distr. Mina, Teotepec, 2650 m, oak and pine forest, 1.5 m high, Hinton et al 14801 (LL ,TEX). VERACRUZ: ca 4 mi W of Prof. R. Ramirez, ca 2450 m, 9 Dec 1984, Spooner 2875 (TEX).

AGERATINA WARNOCKII B. Turner, sp. nov.

A. viscosissimae affinis sed foliis parvioribus crassioribus petiolis brevioribus laminis plerumque deltoideis et capitulis numerosioribus in pedunculis brevioribus differt.

Suffrutescent herb or shrublet to 1 m high. Stems densely pubescent with glandular trichomes. Leaves opposite throughout, 4-7 cm long, 2-3 cm wide; petioles 1.5-3.0 cm long, glandular-pubescent; blades deltoid to deltoid-cordate, thick, dark green to purplish, glandular-pubescent above and beneath, 3-nervate from the base, the margins irregularly dentate with 5-8 teeth to a side. Heads 8-30 in terminal, somewhat open corymbs, the ultimate peduncles, 0.5-2.5 cm long. Involucres campanulate, 5-6 mm high, biseriate, eximbricate; bracts linear, 2-costate, glandular, the apices acute. Florets ca 40 to a head; corollas white, ca 5 mm long, the tube ca 2 mm long, the limb abruptly funnelform, the lobes pubescent. Achenes spindle-shaped, ca 1.6 mm long, sparsely hispidulous; pappus of ca 20 white, barbellate, readily deciduous, bristles 3.5-4.5 mm long.
TYPE: MEXICO. DURANGO: just W. of Puente Buenos Aires along route 40 west out of Durango at km 154, west side of road in pine woods, 12 May 1980, Michael J. Warnock 2066 (TEX; isotype MEXU).

Additional specimens Examined: DURANGO: 78 mi W of Durango, 9000 ft, 18 Mar 1966, Hess & Hall 632 (MICH); ca 34 road miles W of El Salto, head of barranca, pine

forests, 2400-2500 m, 24 Mar 1951, McVaugh 11530 (MICH); ca 6 mi W of Durango, mesa ca 3 mi due N of Presa Guadalupe Victoria, "rocky volcanic flats with Quercus Acacia and Opuntia, 26 Mar 1984, 6900 ft, Sanders et al. 4860 (TEX); eastern end of El Espinazo de Diablo, 16 mi E of Revolcaderos, 7800 ft, 26 Mar 1984, Sanders et al. 4887 (TEX).

The species belongs to the subgenus Ageratina and is presumably most closely related to the widespread A. viscosissima (sensu McVaugh, 1984), but differs from that taxon in possessing smaller, thicker, deltoid leaves and a fewer-flowered, more open capitulescence. I first became aware of the taxon by the holotype but, thinking this might be an aberrant A. viscosissima, I set it aside until additional collections might come to the fore. As noted above, these have, and all share the combinations of characters alluded to, which mark A. warnockii as quite distinct.

It is a pleasure to name this taxon for Dr. M. J. Warnock of Sam Houston State University, Huntsville, Texas, prolific collector and expert on the genus Delphinium.

ACKNOWLEDGEMENTS

I am grateful to Dr. Guy Nesom for the Latin diagnoses and to Dr. Linda Vorobik for the illustrations.

LITERATURE CITED

Grashoff, J. L. and J. H. Beaman. 1969. Studies in Eupatorium (Compositae) I. Revision of Eupatorium bellidifolium and allied species. Rhodora 71:566-576.

McVaugh, R. 1984. Eupatorium, in Flora Nova-galiciana 12:340-424.

Turner, B. L. 1987. New species and combinations in Ageratina from northcentral Mexico. Phytologia 63:4-6.

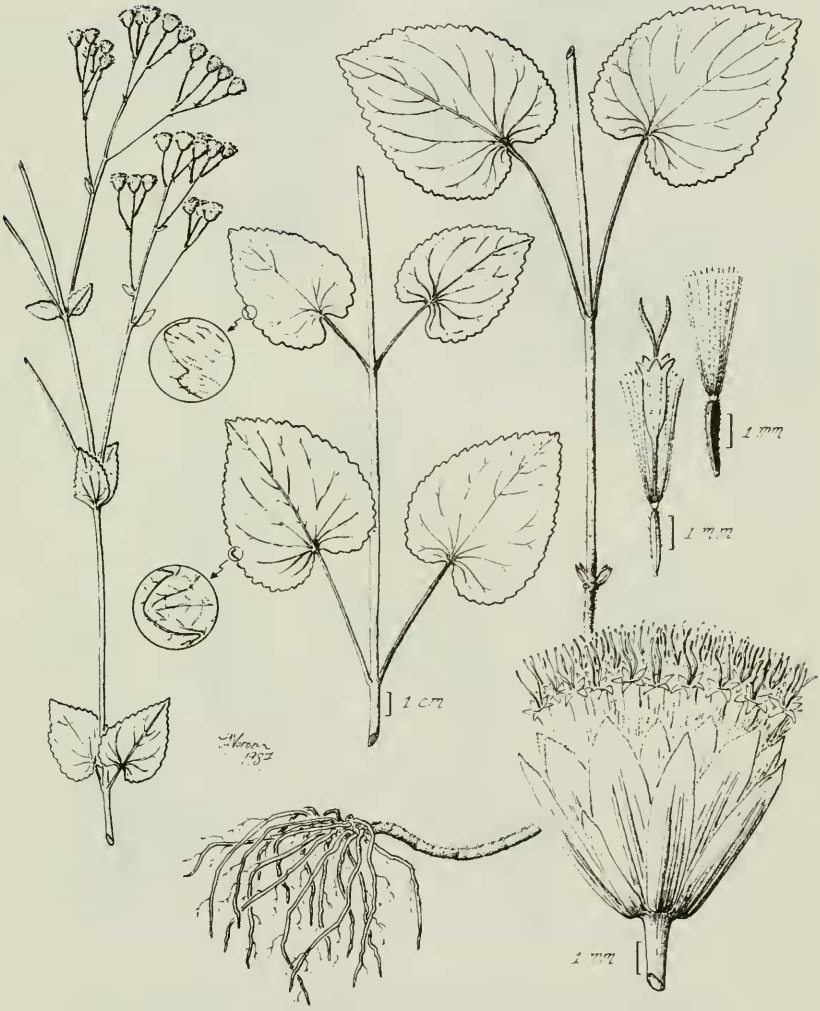

Fig 1 Ageratina Barriei, from holotype

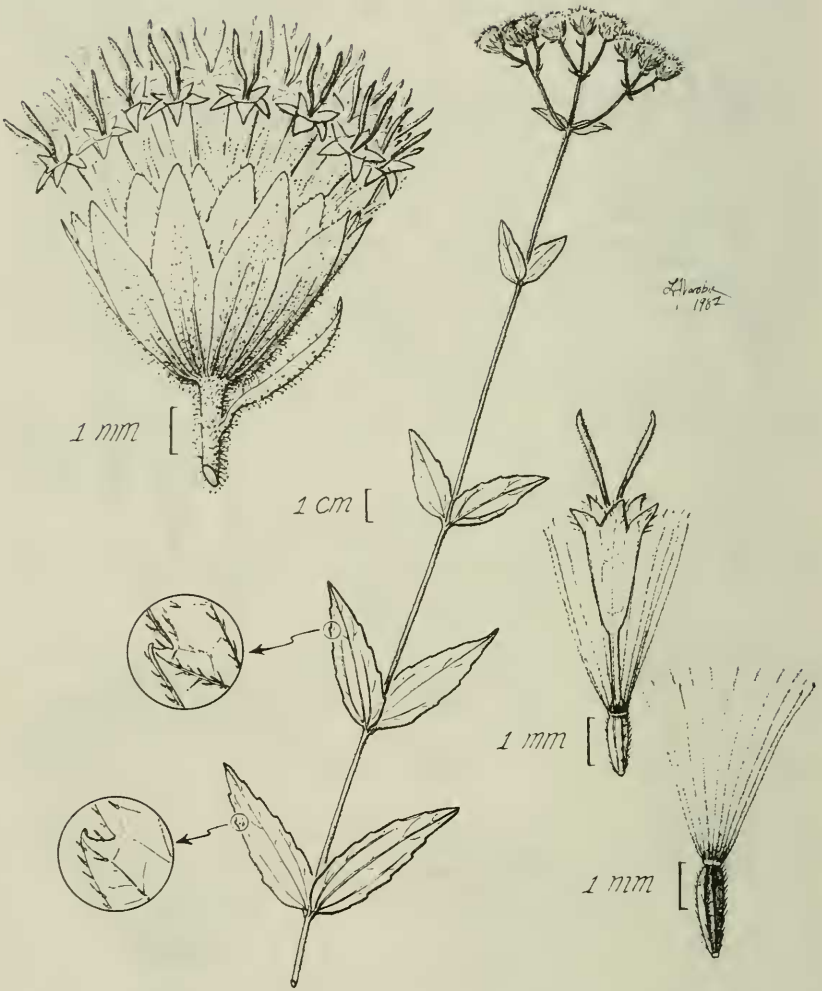

Fig. 2. Ageratina neohintoniorum, from holotype.

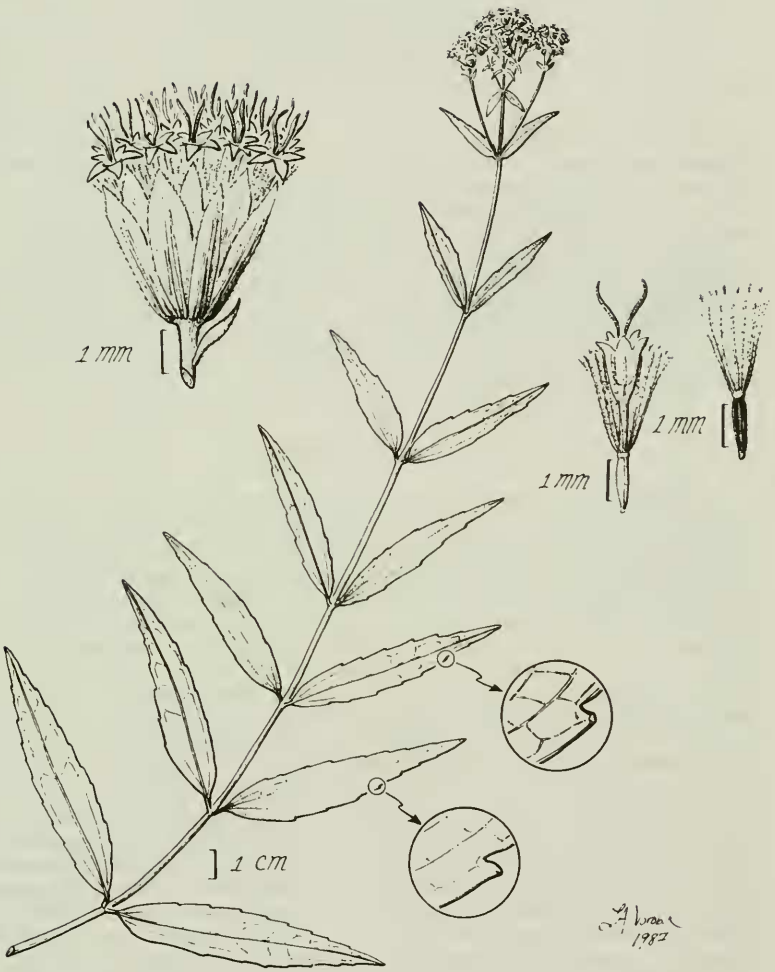

Fig. 3. Ageratina Sandersii, from holotype.